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*Mrs. Gref*

UNITED STATES DEPARTMENT OF AGRICULTURE  
Bureau of Agricultural Engineering

MONTHLY NEWS LETTER

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: No purchases made of such supplies as brooms, brushes, and :  
: canvas articles, should be made in the field but requisitions :  
: should be placed with the Washington Office. See Bureau Memo- :  
: randum No. 17, dated May 5, 1933. :  
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: Department Regulations governing leave are amended to pro- :  
: vide that the minimum charge for absence on account of sickness :  
: shall be one-half day and additional fractions shall be charged :  
: in multiples of one-half day. :  
:.....

D. G. Miller, G. R. Shier, and W. D. Ellison have spent some time in the Washington office in the preparation of a report on the rehabilitation of the Little River Drainage District.

Ditching of the experimental depth drainage plots at Belle Glade, Fla. have been continued by B. S. Clayton. Check levels have been run over the test wells in the Canal Point area. An automatic water stage recorder has been installed and a 4-inch centrifugal pump.

During the latter part of April, C. E. Ramser accompanied Mr. Carpenter Extension Agricultural Engineer, on an inspection of gullies and gully control work in Pawnee County, Okla. On one farm visited erosion at the upper end of gullies had been checked by terracing the field above and building small earth dams in the gullies. Mr. Ramser next visited badly gullied sections in Oklahoma, Grady, Gaddo, and Beckham counties, Okla. One gully varied from 60 to 80 feet deep, 200 to 300 feet wide and had progressed  $\frac{3}{4}$  mile in one season. Another gully was reported to have moved  $\frac{3}{4}$  mile in a week during which 12 inches of rain fell. Mr. Ramser addressed a farmers' meeting in Beckham County.

To date D. L. Yarnell has completed tests on  $180^\circ$  continuous curve pipe bends,  $90^\circ$  circular bends,  $90^\circ$  abrupt angle bends and  $180^\circ$  reversed curve bends.

The Bethany Station in charge of A. T. Holman, has been visited during the last month by four classes in erosion control methods. A class of 15 conducted by F. J. Uhlig, Vocational Agriculture Instructor at Gentry, Mo. visited the station on April 28. The entire class in Agricultural Engineering from the University of Nebraska, under the leadership of E. E. Brackett, Director of Agricultural Engineering and I. D. Wood, Extension Agricultural Engineer, made a tour of the station on April 29. Fifteen students from Gar, Mo., accompanied by Mr. Gillespie, vocational agriculture teacher, visited the station on May 2. On May 3 ten county agents from the north central part



of Missouri and the District Agent of the northern district spent the entire day at the farm receiving instructions in erosion control.

On the Tyler farm, according to R. W. Baird, a terrace 1,700 feet long with 5 feet vertical spacing and variable grade of level to 3 inches per hundred feet in two years lost only 80.6 per cent as much soil and 77.0 per cent as much water as another terrace identical in all dimensions except grade which was constant at 3 inches per hundred feet.

H.O. Hill has completed the installation of two Parshall measuring flumes with Ramser silt samplers at the ends of terraces on the Chapman farm near the Temple station. These installations will measure, for comparison, the run-off and soil loss from similar terraces under different methods of cultivation.

An erosion model of a portion of the college farm was prepared by E. C. McGrew, in cooperation with the Bureau of Chemistry and Soils, and with the Forestry Department of Washington State College. Eroded fields, timbered areas, grass lands, and alfalfa fields are shown on the model, which was exhibited at the Little International show conducted by the agricultural department of the college and at the annual exhibit of the College of Engineering.

Several types of gages have been designed and installed at the Guthrie station by H. S. Riesbol to determine the maximum depths of flow in terrace channels and outlet ditches. The criterion for these gages is simplicity of operation and maintenance, and economy in cost of construction and installation.

On May 8, C. A. Bennett visited Birmingham, Ala. at the request of the Continental Gin Co. and conferred with its officials relative to various phases of cotton ginning. Mr. Bennett also inspected a new distributor-drier which that company expects to place on the market and which utilizes the "Government Process" which our Bureau has developed.

Mr. W. W. McLaughlin, who has been in the Washington office for several weeks will return to Berkeley about June 1.

Manuscript for a Technical Bulletin on "Flow of Water in Flumes" by Fred C. Scobey was completed and submitted to Washington. In gathering data for this report Mr. Scobey made tests in ten of the Western States and in Canada on flumes of concrete, metal, and wood, ranging in size from one foot to 20 feet wide. There was also a wide range in alignment, surface condition, and velocity of these structures.

Water-spreading on plots at Azusa, Calif., was discontinued April 19, for the season, due to a diminished water supply resulting from low precipitation this past winter and early spring. Dean C. Muckel, who is in charge of the field work on this project, reports that during the last week's run, a percolation rate of 9.3 acre-feet per day per acre was recorded on the plot covered with native vegetation, and 8.0 acre-feet per day per acre on the basined plot. These are the highest rates which have been obtained in the history of the plots. During February, the rate had decreased on the basined plot, apparently because of a scum that had formed on the ground surface. Spreading was discontinued for a week in February and the scum was cleared off. Thereafter the rate of penetration was found to be normal.

Revision of Farmers' Bulletin 1404, Pumping from Wells for Irrigation, was completed by Carl Rohwer.

In reference to the unemployment reforestation program recently authorized by Congress, O.A. Faris reports that since Texas has no national forests in which work of this nature can be carried on, construction of dams for water storage for recreational purposes and flood control and of flood



damage on irrigation systems are being offered as construction projects, to enable the State to participate in that fund. The Board of Water Engineers, with which our Division of Irrigation cooperates, has been called upon to help shape applications for aid.

L. M. Winsor has been assigned on a part-time basis to work with the Forest Service officials in Utah on flood control and erosion problems under the new reforestation program. He has also been requested by the State officials of Utah to take supervisory charge of the flood control work to be carried on under the enlarged plan for State participation. This latter work may be conducted on private lands under certain conditions prescribed in the regulations which govern expenditures of the emergency funds. Mr. Winsor has also been called in for similar work in Nevada.

A Twin Falls measuring gate is being calibrated by R. L. Parshall at the Bellevue hydraulic laboratory. The calibration of the 2-foot gate has been about completed and it has been found that the tables given agree substantially with Mr. Parshall's findings. However, it appears to be possible that using the scale measurements may result in error amounting to approximately 20 per cent, due to the turbulent conditions of flow between the upper and lower gate resulting from difference in pressure head on the two gates. Further study is being made as to the merits of the device.

J. C. Marr has been asked by the Forest Service officials in Idaho to assist them in planning flood control work under the same relief program.

L. G. Schoenleber returned to Toledo May 1, having completed a series of preliminary tests on grain cleaners at the University Farm, St. Paul, Minn. As a result of these tests and a conference at the Washington office, three farm-size grain cleaners have been purchased for the development of suitable equipment for removing smut balls from seed wheat. The work will be continued by W. M. Hurst and W. R. Humphries at Arlington Farm, Virginia.

A rotary plow recently obtained from Australia for experimental work was given a trial at Toledo, after which changes were made in the machine in an effort to control insect pests which spend part of their life cycle in the ground. This plow together with a Swiss rototiller, a Danish rototiller-type plow fitted with special knives, and the California rotary plow were demonstrated at Moorestown, N.J. May 16 under the direction of Frank Irons and V. D. Young and in cooperation with the Bureau of Entomology.

R. B. Gray attended the demonstration at Moorestown and then proceeded to New York where he conferred with officials of the Thurberator Co. relative to their product, which is in the nature of an attachment for tractors and trucks to permit of the more efficient burning of low-grade fuels. The Texas Company was also contacted relative to fuels and lubricants.

Planting operations in the fertilizer placement studies with cotton, potatoes and tobacco in the Southern States have been completed by Messrs. Cumings, Sharp, and Redit. These studies indicate to date that fewer plants die and growth is more rapid when the fertilizer is applied in a band at each side of the row than when the fertilizer is placed either under or mixed with the soil around the seed. A commercial transplanter on which suitable attachments were mounted has been used in the tobacco work.

E.M. Mervine reports that the light rainfall in Colorado for the last three years made spring plowing very difficult, and in some cases impracticable to prepare the fields for seeding. Recently conditions changed and now the field work is considerably handicapped because of almost continual rains.



In connection with sugar beet cross-blocking tests, S. W. McBirney at Davis, Calif. reports that an actual stand of 101.9 beets per 100 ft. or row was obtained when setting the machine to give a theoretical stand of 100.8, as computed from a formula worked out by Mr. Mervine.

John W. Randolph reports that variable depth attachments have been installed on six types of cotton planters. A representative of the Bureau of Plant Industry at Charleston, S. C., connected with the Sea Island cotton investigations, visited this project with the view of utilizing the variable depth principle in his planting investigations.

A model of the original variable depth planter was constructed and shipped to the Washington office.

On the corn production machinery project at Ames, Iowa, Claude K. Shedd reports that an experimental machine attachment for a corn lister patterned after one previously patented has been designed and built which promises to remove the most serious objections to listing as a method of raising corn. The greatest difficulty with listing is that rain water readily flows in the furrows, thus washing out the seed and causing soil erosion on hillsides and also causing water to accumulate and stand in the furrows at low points in flat fields. The attachment built at Ames places dams in the lister furrows at intervals of 4 ft. or more, thus holding water in the furrows and allowing to soak in where it falls.

D. A. Isler has been transferred to El Paso for tests of the pusher-type stalk shaver and compilation of reports of cultural methods for pink bollworm control.

A device for determining the hardness, or resistance to crushing of cereal grain has been constructed by W. M. Hurst and W. R. Humphries. Preliminary tests indicate a definite correlation between the hardness of the kernels of grain and their moisture content. If such a relation can be established, a simple inexpensive moisture tester for farm use can be made available.

E. D. Gordon advises that he has installed a pipe 2 feet in diameter in a horizontal concentric position in the 6-foot rotary drum drier. This extends 20 of the 24 feet which is the length of the outer shell, and in effect increases the length of travel of the chopped forage and the drying gases from the furnace, and lengthens the zone in which moisture can be evaporated. With the single pass of 24 feet as it was operated last season, the temperature of the exhaust gases from the drier collector were extremely high and the amount of discharged material was comparatively small.

A paper was prepared by J. W. Randolph on the cooperative work in Miss. for Purdue meeting of A.S.A.E. on "Power Requirements and Effect on Yield of cotton with Several Methods of Seed Bed Preparation on Alluvial Soils."

Several farmers using our variable depth planter report favorable results.

Experimental waterproofing and damp proofing treatments of rammed earth walls are being made by G. M. Warren on the rammed-earth fertilizer machinery building at Arlington Experiment Farm.

Wallace Ashby is making a study of farm housing in a number of southern States, one purpose being to develop better methods and types of construction of low-cost farm dwellings and other farm structures.

Two experimental implements shelters have been erected under the supervision of M. A. R. Kelley at the Beltsville farm. These shelters are covered with 8 and 12-ounce duck and painted with various waterproofing preparations.

The exchange plans service of the Division of Plans and Service is being rapidly developed. A number of orders for exchange plans have already been received from various States. It is hoped that an exhibit, showing the working of the system, can be prepared in time for the annual meeting of the A.S.C.E. at Purdue, Indiana in June.

Drawings and specifications are being prepared for the equipment of about 75 laboratories in the new south building of the Department for the Food and Drug Administration. A manuscript on adobe construction has been prepared by T. A. H. Miller.